February 11, 2009

FILED
2009 FEB 11 P 3:55
PUBLIC UTILITIES COMMISSION

The Honorable Chairman and Members of the
Hawaii Public Utilities Commission
465 South King Street
Kekuanaoa Building, 1st Floor
Honolulu, Hawaii 96813

Subject: Docket No. 2008-0273
Feed-In Tariffs Investigation
Information Request Responses

Pursuant to the Order Approving the HECO Companies' Proposed Procedural Order, as Modified, filed on January 20, 2009, attached are Hawaiian Electric Company, Inc. ("HECO"), Hawaii Electric Light Company, Inc. ("HELCO"), Maui Electric Company, Limited ("MECO") (collectively, the "HECO Companies") and the Division of Consumer Advocacy's ("Consumer Advocate") joint responses to the information requests submitted January 28, 2009, by the following parties[1] in the above proceeding:

- City and County of Honolulu
- The Department of Business, Economic Development, and Tourism
- Haiku Design and Analysis
- Hawaii BioEnergy, LLC and Maui Land and Pineapple Company, Inc.
- Hawaii Renewable Energy Alliance
- Hawaii Solar Energy Association
- Alexander & Baldwin, Inc. through its division, Hawaiian Commercial & Sugar Company
- The Solar Alliance
- Tawhiri Power LLC

Sincerely,

for Catherine P. Awakuni
Executive Director
Division of Consumer Advocacy

Darcy Endo-Omoto
Vice President
Hawaiian Electric Company, Inc.
Hawaii Electric Light Company, Inc.
Maui Electric Company, Limited

Attachments

cc: Service List

[1] The following parties did not submit information requests: Blue Planet Foundation, County of Hawaii, Clean Energy Maui LLC, Hawaii Holdings, LLC, doing business as First Wind Hawaii, Life of the Land, Sempra Generation, Sopogy Inc., and Zero Emissions Leasing LLC.

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Response to

City and County of Honolulu's

Information Requests

C&C/HECO-IR-1

Please elaborate on the circumstances under which an existing renewable energy generator would be considered a "new" renewable energy generator, eligible to be compensated at the FIT. Specifically, what would constitute a generator being "repowered"?

HECO Response:

Generally, a repowered system is an existing generating system in which a significant portion of the generating equipment is replaced. The HECO Companies and Consumer Advocate propose for consideration the repowering definition used by both the Green-e certification program[1] and the California Energy Commission[2], which is that a generator must replace all prime generating equipment with new equipment in order to be repowered, such that 80% of the post-repowering fair market value of the system derives from new generation equipment.

[1] Green-e Repowering Criteria. Available from: *www.**green-e**.org/docs/**Repowering**_Defin_and_Instructions.doc*
[2] California Energy Commission. (2008). *Renewables portfolio standard eligiblity: Commission guidebook* (3rd Ed., CEC-300-2007-006-ED3-CMF). Sacramento, CA.

C&C/HECO-IR-2

Please describe in detail how HECO /Consumer Advocate reached their conclusion that capacity additions to existing renewable energy generation requires the entire capacity to be placed under a FIT. Should not it be the option of the generator whether to migrate its existing capacity to the FIT?

HECO Response:

The HECO/Consumer Advocate proposal is to allow existing net energy metered or Schedule Q generating systems to be grandfathered, and not required to be contracted under the new FIT. Expansions of net energy metering capacity or Schedule Q capacity would not be allowed once the FIT is implemented. In accordance with this proposal, all energy contracted under a FIT must be segregated from such grandfathered net energy metering or Schedule Q energy. Thus, if a generator desires to install additional generation at the same site as an existing net metered or Schedule Q system but wishes to keep the existing system under net energy metering or Schedule Q, that new generation must be installed, contracted, and metered as a separate and distinct system under the FIT.

This decision was motivated primarily by the Hawaii Clean Energy Agreement, in which the parties agreed that renewable energy purchases should no longer be based on avoided cost and that the "utility should purchase renewable energy at prices that are increasingly delinked from oil prices." Because Hawaii's avoided costs rates are based primarily on oil, shifting where appropriate to long-term feed-in tariffs based instead on the generation cost of renewable energy systems could result in lower, and more stable, contract price levels.

HECO's proposal is therefore designed to encourage migration away from avoided cost and net metering contracts towards feed-in tariffs, and the capacity expansion "trigger" is one mechanism to support this objective.

C&C/HECO-IR-3

Please elaborate on how migration of existing renewable energy generators to a FIT will be treated under the annual capacity targets limits to be proposed.

HECO Response:

As discussed in Section 3.6 of the HECO Feed-In Tariff Program Plan, filed December 23, 2008, the proposed annual capacity targets are primarily intended to manage technical grid integration and cost impacts of new FIT resources. Existing generators are already integrated with the grid, and the potential cost impacts of migrating existing net energy metering, Schedule Q, and other systems to the FIT is expected to be small assuming the HECO/Consumer Advocate proposal to focus the FIT on smaller, distributed renewable systems is accepted. As a result, HECO envisions that the annual capacity target may only apply to new capacity additions, and not to migrating existing generators.

Response to

The Department of Business, Economic Development, and Tourism's

Information Requests

DBEDT-IR-1 (HECO)

a) Please state and explain the goals and/or objectives of the HECO and CA's joint proposal on feed-in tariffs, and explain how each goal or objective will be achieved by the proposal.

b) Please explain how the joint proposal will help achieve the HCEI goal of promoting and increasing the use and development of renewable energy resources to supply 70% of Hawaii's energy needs by 2030, which the Energy Agreement between the State and the HECO companies ("Energy Agreement") purports to support.

Response:

a) As stated on page 3 of the HECO Feed-In Tariff Program Plan, filed December 23, 2008 to the Commission:

> Consistent with the HCEI agreement, the FIT Proposal is intended to expand the amount of renewable energy on the HECO Companies' systems in conjunction with other mechanisms, and ultimately replace net metering and the HECO Companies' Schedule Q tariffs. By also setting rates at the cost of technology (plus profit), the FIT will delink costs paid to generators from the HECO Companies' avoided cost which is presently primarily linked to fossil fuel generation, also a goal of the HCEI Agreement

The policy objectives of the HECO Companies and Consumer Advocate's joint proposal on feed-in tariffs are stated in Section 3.1 of the HECO Feed-In Tariff Program Plan and are repeated as follows:

> Recognizing the unique technical characteristics of Hawaii's isolated island grid systems, the current high cost of electricity, and the desire to establish a FIT system that is efficient, a FIT will benefit Hawaii when it achieves the following policy objectives:
>
> 1. Facilitates an electric utility's acquisition of renewable energy in a systematic manner;
> 2. Offers a means by which to acquire new renewable energy resources that are reasonable in cost; and
> 3. Does not negatively impact the reliability or unduly encumber the operation or maintenance of Hawaii's unique island electric systems.

The joint FIT proposal accomplishes the first policy objective via the proposed use of standardized FIT terms, conditions, and administrative processes, pre-approved FIT

energy payment rates, and the establishment of annual FIT quantity targets. The second policy objective is supported by setting the FIT energy payment rates to provide a reasonable profit to renewable energy developers, by use of annual FIT quantity targets, the complementary use of other contracting mechanisms such as competitive bidding that may be more appropriate to secure cost-effective energy from larger resources, and the proposal to focus FIT on technologies that are more proven with known cost data. The third policy objective is met through compliance with appropriate interconnection, system integration, and operational requirements, by encouraging development of FIT resources that have known operational characteristics and are "grid friendly", and by setting annual FIT quantity targets and FIT eligibility criteria that take into account the unique system integration issues of each island's grid.

b) As stated in Section 3.2 of the HECO Feed-In Tariff Program Plan, submitted December 23, 2008 to the Commission:

> The FIT is proposed to complement other mechanisms to acquire renewable energy, out of recognition that these mechanisms may be more appropriate in targeting development of certain resources. For example, larger dispatchable resources or technologies requiring large economies of scale (e.g., waste-to-energy) are more effectively encouraged and developed using the PUC's Framework for Competitive Bidding. Therefore the proposed FIT targets smaller scale resources.
>
> The FIT mechanism is also intended to support predictability and streamlining in pricing, contracting, and project development, to the benefit of both renewable energy producers and ratepayers. Therefore the FIT initially targets those projects for which Hawaii-specific costs and technical requirements are better understood and can be established in the near term. Other resources for which a FIT is not immediately available can be contracted on a one-off basis with the utility under existing processes.
>
> Thus, the FIT is best considered as a one of several renewable resource acquisition mechanisms that operate in parallel, with the FIT specifically targeted at distributed resources

for which there is a suitable experience base in Hawaii. The FIT will complement (1) the Framework for Competitive Bidding, (2) negotiated power purchase agreements, and (3) the PV Host Program to be developed by the HECO Companies. In addition, site owners will continue to be able to develop on-site generation systems to serve on-site power needs.

The Energy Agreement explicitly documents numerous programs and renewable energy projects that, along with the FIT, will help achieve the HCEI goal of promoting and increasing the use and development of renewable energy resources to supply 70% of Hawaii's energy needs by 2030.

DBEDT-IR-2 (HECO)

Please specify how much renewable energy resources the HECO companies plan to purchase through the feed-in tariffs, and by when.

Response:

The HECO Companies will use the FIT to acquire as much energy from distributed renewable energy resources as is feasible, taking into account the factors described in Section 3.6 of the HECO Feed-In Tariff Program Plan ("HECO FIT Plan") filed December 23, 2008. As multiple resources are contracted each year, the potential exists to ultimately contract with a significant number of megawatts across the HECO Companies' service territory via the FIT. As stated in Section 3.6 of the HECO FIT Plan:

> Annual FIT quantity targets will be established for each technology for each island and will be regularly updated in the course of the FIT Update. The annual quantity targets will be based on both technical and non-technical considerations, including the following:
>
> - ***Renewable portfolio standards requirements ("RPS").*** The Hawaii RPS requires the HECO Companies to obtain 20 percent of net electricity sales from renewable electrical energy by 2020. The HCEI Agreement proposes to increase the RPS renewable generation requirement to 40 percent by 2030. The FIT will serve to incent the installation of renewable generation at an increased rate.
> - ***The goals of the Hawaii Clean Energy Initiative ("HCEI").*** The overarching objective of the HCEI is the "economic and culturally sensitive use of natural resources to achieve energy supply security and price stability for the people of Hawaii, as well as significant environmental and economic opportunities and benefits." A FIT will act to allow for the economic development of the State's abundant renewable resources, which will provide both environmental and economic benefits by reducing reliance on expensive, imported fossil fuels.
> - ***Technical attributes of the resources***. Higher annual FIT quantity targets can be set for FIT systems that support reliable grid management such as low-frequency ride through, the ability to provide reactive power and the ability to be curtailed or dispatched by utility system operators.
> - ***Characteristics of the utility systems being interconnected.*** Certain HECO Companies are able to incorporate more FIT generation than others, due to variations in the size and robustness of the transmission and distribution grid and the differences in

customer load among the islands. The annual quantity targets will be designed to account for these differences.

- ***Cumulative amounts of installed variable resources.*** Setting of the annual FIT quantity targets for each island must consider the cumulative amount of variable generation that is installed island-wide, including via resource acquisition mechanisms besides the FIT. Certain HECO Companies already have a significant level of RPS-eligible and distributed generation capacity and may have correspondingly less ability to incorporate higher levels of FIT-eligible resources. HELCO, for instance, already receives over 30 percent of its energy from RPS-eligible resources, with an increasing level from distributed generation resources. The large penetration of variable, non-dispatchable generation has resulted in fewer generating units on-line providing grid stabilization and frequency regulation, reduced island system stability, and greater frequency swings due to the variable generating output from wind and PV technologies. Curtailment of renewable generation at HELCO is already occurring at times to maintain system stability.

There is a need to establish high level cumulative system targets for intermittent generation by island to avoid system stability issues and reduced system reliability. The cumulative system capacity targets should include all variable generation including independent power producers, net energy metered systems, and FIT systems that will contribute to island system stability issues. The high level cumulative target settings by island will be incorporated and regularly updated in the CESP process. The annual FIT quantity targets will take this into account when the data become available. In the interim, to manage this issue for those island systems that are already highly sensitive to adding more variable resources such as at HELCO, the initial proposed FIT will target resources with grid-friendly features.

- ***Impacts on curtailment of as-available energy from existing resources.*** Some of the HECO Companies already curtail generation, including renewable energy generation, in order to maintain system reliability, such as during times of high wind generation at minimum system load periods. Adding additional variable generation via the FIT that is not controllable may increase the amount and frequency of existing renewable generation that is curtailed. The annual FIT quantity targets and requirements for curtailment of certain types of FIT resources must take this into account.

- ***Projected energy production levels.*** The HECO Companies and the Consumer Advocate have agreed to initially limit the FIT to a subset of RPS-eligible technologies in part because these technologies are already, or are in the process of being, implemented in Hawaii in commercial applications. Therefore, projected energy production levels from these FIT-eligible resources can be made with greater confidence that the energy will in fact be produced to meet ratepayer needs. There is greater uncertainty as to whether the energy from technologies that have not been deployed commercially in Hawaii, or are at a more R&D stage than other technologies will in fact materialize. Because of the proposed quantity and size targets and queing process for interconnection, it is necessary to ensure that the projects are likely to materialize. Waiting until the first FIT Update to add the Phase 2 technologies listed above will allow time for more information on cost and projected energy production levels to be gathered and increase

the likelihood of successfully implementing the FIT as well as the generation technologies coming on-line.

- ***Ratepayer impacts.*** Under a FIT, the HECO Companies will purchase generation from eligible FIT resources. Annual FIT quantity targets should consider the total amount of FIT power purchase costs from year to year and the resultant impacts on ratepayers. Consideration of ratepayer impacts should also take into account ratepayer impacts from other resource acquisition mechanisms.

- ***Impacts on utility credit ratings.*** Power purchases may affect the HECO Companies' credit rating, as the credit rating agencies view these purchases as potential debt for the HECO Companies. Should the HECO Companies' credit ratings be lowered for any reason, financing costs for the HECO Companies may increase. Therefore, the ability of the HECO Companies to purchase generation from third parties without affecting the HECO Companies' credit rating will affect the determination of annual capacity targets for the FIT. Imposing an annual FIT quantity target, plus the HCEI agreement to include 10% of the utility's purchases under the feed-in tariff in rate base through January 2015, will help mitigate this issue.

- ***Administrative resource requirements.*** Deploying the FIT will require the HECO Companies to process FIT applications, conduct Rule 14.H interconnection reviews, and otherwise administer the tariff. The annual FIT quantity target will aid in managing these administrative resource requirements.

- ***Other policy goals including the desire to provide fair opportunity to multiple developers or to encourage development of certain market segments, for example, residential and small commercial PV.*** How the FIT is designed will determine whether or not residential and small commercial PV systems can get a reasonable portion of the market share. Specific elements of the FIT should facilitate the development of these markets. These elements include quantity targets, interconnection requirements, and eligibility among others.

To the extent feasible within the timeframes set by the Commission's procedural schedule, the HECO Companies will endeavor to propose preliminary interim annual FIT quantity targets in their opening Statement of Position to be filed on February 25, 2009.

DBEDT-IR-3 (HECO)

a) Please specify the types and sizes of renewable resources targeted by the joint proposal that would satisfy the four criteria specified in the referenced page of the proposal.
b) Please specify what exactly is meant by "lengthy interconnection studies" as used in criterion #2, and whether or not these "lengthy interconnection studies" are or will be factored into the timeline for the contracting process or procedure for the FITs.
c) Please specify what exactly is meant by "significant interconnection requirements" and whether or not they are above and beyond what is normally required for interconnecting current and future net energy metered customers.
d) Is it HECO's position that PV and CSP systems that are 500 kW or less in size, as well as in-line hydropower and wind power systems that are 100 kW or less in size, do not require "lengthy interconnection studies" and "significant interconnection requirements"?

Response:

a) The proposed FIT initially targets renewable resources that meet the criteria listed on page 5 of the joint proposal:

(1) Do not require complex environmental and land use permitting which may impose significant uncertainties in project development timeframes and costs;
(2) Do not typically, by virtue of their operating characteristics and size relative to the utility system, require extensive and lengthy interconnection studies or the need for significant interconnection requirements;
(3) Utilize technologies for which complex financial accounting issues relative to utility power purchase contracts have already been addressed, and
(4) Have already been, or are currently in the process of being, implemented in Hawaii in commercial (non-R&D) application.

The KEMA Report lists the following technologies proposed to be included in the first phase of the FIT implementation[1]:

- Photovoltaic (PV) systems up to and including 500 kW2 on Oahu, 250 kW on Maui and Hawaii Island, and 100 kW on Lanai and Molokai.
- Concentrated solar power (CSP) systems up to and including 500 kW on Oahu, Maui and Hawaii Island, and up to and including 100 kW on Lanai and Molokai.
- In-line hydropower systems up to and including 100 kW on Oahu, Maui, Lanai, Molokai, and Hawaii Island.
- Wind power systems up to and including 100 kW on Oahu, Maui, Lanai, Molokai, and Hawaii Island.

[1] KEMA Report at page 15
[2] For inverter based technologies, contracted capacity refers to kW ac.

Phase 2 implementation, via the FIT Update process, will give priority consideration to developing tariffs for the following technologies:

- Wave energy generating systems;
- Landfill gas generating systems;
- Sewage-based digester gas generating systems;
- Biomass, including biomass crops, agricultural and animal wastes, and municipal solid waste; and
- Liquid biofuel-fired systems.

b) Under the HECO Companies' existing Rule 14.H, Appendix III (Interconnection Process Overview) technical review process, the Company will perform an initial technical screening within 15 business days following submission by the Customer of all necessary information regarding the proposed distributed generating facility, to determine if additional technical study will be required. The scope of the additional technical study will depend on the complexity of the utility system that the generating facility is interconnected to which must be modeled, and the degree to which the generating facility will affect the utility system. Examples of analyses that would be done as part of the additional technical study include: 1) Feeder Load Flow; 2) Dynamic Stability Analysis; 3) Transient Overvoltage; and 4) Short Circuit and Relay Coordination. The "lengthy interconnection studies" mentioned on page 5, criterion #2 of the Joint Proposal refers to this "additional technical study" described in the Rule 14.H technical review process.

If in the initial technical screening it is determined that additional technical study (potentially "lengthy interconnection studies") will be required, the additional technical study will be factored into the timeline for the contracting process.

c) "Significant interconnection requirements" include new utility system equipment or upgrades such as direct transfer trip equipment, feeder conductor upgrades, or new transformers. These interconnection requirements are not required for interconnecting net energy metered customers that are 10kW or less. For net energy metered customers greater than 10kW, an initial technical screening and additional technical study (if required) determines if additional interconnection equipment will be required. Typically, these additional interconnection equipments are not required for the current net energy metering size limits. If the generating unit size limits for net energy metering are increased in the future, then the potential for requiring additional interconnection equipment for larger generating units would increase accordingly with the increased potential system impact from larger size generating units.

d) The HECO Companies' proposed list of FIT-eligible technologies and project sizes is intended as an initial set of resources for which there is a greater *likelihood* of more straightforward interconnection. As stated in Section 3.4.1.1 of the HECO Feed-In Tariff Program Plan:

> ...the proposed FIT initially targets resources that...do not inherently, by virtue of their operating characteristics and size relative to the utility system, require extensive and lengthy interconnection studies which may identify the need for significant interconnection requirements. (KEMA Report Page 17)

The HECO Companies' FIT proposal further explains the reasoning for this criterion and notes that more complex interconnection studies and requirements may still be called for on a case-by-case basis, as interconnection is also sensitive to locational characteristics:

(This) criterion refers to the fact that larger generator sizes and certain technologies will inherently increase the potential for utility grid impacts, and may require more extensive technical review and requirements to safely and reliably interconnect to the utility grid. For example, larger, "central station" generating resources must go through a complex interconnection requirements study ("IRS"). Even "distributed generation" resources interconnecting into distribution circuits may trigger the need for more extensive studies and interconnection requirements. As discussed elsewhere, the proposed FIT adopts the HECO Companies' Interconnection Tariff Rule 14.H to ensure that safety and reliability are not compromised. One of the critical technical issues is the aggregate penetration of generation resources on a distribution circuit. In Rule 14.H, a more extensive interconnection study may be triggered if the aggregate penetration of generation resources on a circuit exceeds 10 percent of the circuit peak load.

DBEDT-IR-4 (HECO)

a) Based on the types and sizes targeted by the proposal, is it correct that HECO plans or envisions its FITs proposal to apply only to net energy metered customers and small distributed generation? If yes, please explain why and how this will promote the increased use and development of renewable resources in HECO's generation portfolio as agreed to by the parties in the Energy Agreement.
b) Please explain how the FITs proposal will be applied to net energy metered customers, including a comparison of its impact on such customers under your proposal and under the current net energy metering statute set forth in Section 269-102, Hawaii Revised Statutes.
c) Please explain how the FITs proposal will benefit existing net energy metered customers.
d) Please explain how the FITs proposal will encourage and increase net energy metered customers.

Response:

a) The HECO Companies and the Consumer Advocate agree that initially, the FIT should target those technologies that are actively being developed in Hawaii, and on project types and sizes that are more straightforward to implement and lend themselves to use of standardized energy rates and power purchase contracting.[1] The response to DBEDT-IR-3a describes the criteria for targeting the initial group of renewable resources and the list of proposed technologies to be included in the first phase of the FIT. The process for the FIT Update is described in the response to DBEDT-IR-8.

The initial FIT is proposed to target technologies for which there is a relatively established experience base in Hawaii, with additional technologies to be added within two years. Furthermore, the FIT is proposed to operate in conjunction with other utility mechanisms for acquiring renewable energy, such as the Competitive Bidding framework, targeting those resources that might not be as effectively accommodated by those

[1] Joint Proposal at 4

processes[2]. A FIT is but one mechanism to facilitate increased renewable energy for the State among a number of well-established mechanisms as well as mechanisms to be developed such as the PV Host Program described in the HCEI Agreement.[3]

b) Consistent with the HCEI Agreement, the HECO Companies and the Consumer Advocate recommend that no applications for new net energy metering contracts will be accepted once the FIT is formally made available to customers. All net energy metering systems under contract, or contracts in the process of utility review at the time the FIT is formally made available to customers, will be grandfathered.[4]

Please see also the HECO Companies' response to HREA-HECO/CA-IR-1.

c) Please see the HECO Companies' response to HREA-HECO/CA-IR-1.

d) Please see the HECO Companies' response to HREA-HECO/CA-IR-1.

[2] KEMA Report at 8
[3] Joint Proposal at 2
[4] KEMA Report at 19

DBEDT-IR-5 (HECO)

Will HECO's FIT proposal apply to the purchase of utility scale renewable resources? If it will not, why not?

Response:

Please see the response to DBEDT-IR-1 subpart b. The HECO FIT proposal applies to the purchase of energy from distributed renewable resources, for which energy payment rates, contract terms and conditions, interconnection, and project development can be reasonably standardized and streamlined. Development of larger, "central station" resources in Hawaii, with highly variable site-development and interconnection costs, project permitting requirements, and unique island-by-island technical challenges of integrating larger variable generation resources within each of the island grids, does not lend itself to such standardization.

Additionally, there are many site development opportunities for distributed resources across the islands, and a FIT is an efficient way of contracting the utility's purchase of energy from these resources. In contrast, there are relatively fewer sites for development of large scale resources – for example, windfarms and waste-to-energy plants. Use of the PUC's Framework for Competitive Bidding is the appropriate contracting mechanism for such larger facilities.

DBEDT-IR-6 (HECO)

Please explain how HECO envisions using the FITs to procure the renewable generation that the HECO companies committed to pursue and integrate into the system under the Energy Agreement, which total 1,612.4 MW by 2030 (HECO = 1308, HELCO = 147.5, MECO = 156.9).

Response:

Please see the response to DBEDT-IR-1, subpart b. The Energy Agreement clearly and explicitly outlines numerous programs and renewable energy projects that will be developed in addition to and independent of the FIT.

DBEDT-IR-7 (HECO)

a) Please specify how much of the total renewable resource commitments under the Energy Agreement summarized HECO plans to purchase through the FITs proposal.
b) How does HECO plan to procure those renewable resources commitments that will not be procured through FITs?

Response:

a) HECO proposes to use the FIT to acquire renewable energy from the distributed energy resources included in the Energy Agreement to the degree possible. Exhibit A to the HCEI Agreement lists a total of 140 MW of PV to be contracted using either a FIT or negotiated power purchase agreements. Exhibit A also lists a total of 127 MW of PV to be developed under net energy metering. The HECO Companies' FIT proposal, consistent with the provisions of the Energy Agreement, is to replace net energy metering with the FIT, in which case the net energy metering megawatts listed would also be targeted to be contracted via the FIT.

b) Please see the response to DBEDT-IR-1, subpart b.

DBEDT-IR-8 (HECO)

What does HECO mean by "The FIT Proposal is intended as an interim starting point..."? How long will this "interim" FIT proposal be in effect? When does HECO plan to design and file a final FIT proposal?

Response:

The joint proposal identifies a set of renewable generation technologies to be eligible for the FIT in the initial two years of the tariff. As stated in the proposal[1] "the FIT will be regularly reviewed for the purpose of updating tariff pricing, applicable technologies, project sizes, and annual targets ("FIT Update). A FIT Update will be conducted for all islands in the HECO Companies' service territory not later than two years after initial implementation of the FIT. Thereafter, the FIT Update will be conducted every three years."

The FIT Update process is intended to allow the tariff to reflect current market conditions and the evolving state of renewable technologies and each island's utility grid. By design the pricing, technologies, project sizes and annual targets may change with every FIT update. But the policies and processes implemented in this docket should be considered "final" and will not be modified without Commission approval.

[1] Joint Proposal at 8

DBEDT-IR-9 (HECO)

a) What is the status of the Net Energy Metering Pilot Program ordered by the Commission in Docket No. 2006-0084?

b) Will HECO's FIT proposal apply to the Net Energy Metering Pilot Program? If yes, please explain what and how it will impact the Program.

Response:

a) The HECO Companies filed their proposed Net Energy Metering ("NEM") Pilot Program on April 28, 2008. On May 12, 2008, intervening parties to the NEM proceeding filed comments on the HECO Companies' proposed Pilot. The HECO Companies are working with the Parties to develop a revised proposed NEM Pilot Program based on the filed comments and numerous working meetings. The proposed NEM Pilot submitted to the Commission consisted of a phased, 4-year program that is comprised of both analytical investigations and field monitoring. The NEM Pilot is limited to no more than eight (8) photovoltaic (PV) system (100 to 500+ kW)) installations and up to a 30% penetration on a single distribution circuit for each utility.

Since the filing of the NEM Pilot Program there have been developments toward accomplishing the goals of the NEM Pilot Program. These include but are not limited to (due in large part to the number and size of PV installations (penetration up 40%) in the Kona area), HELCO proceeding with a "virtual" NEM Pilot by installing power quality monitoring equipment. In addition, to help their system operations, HELCO will require all new PV projects (>30kW) to change their inverter frequency trip setting to 57.0HZ with a clearing time of 300 seconds, consistent with the provisions of HELCO's distributed generation interconnection tariff Rule 14.H.

Moreover, the Energy Agreement calls for the development of a Feed-in Tariff

that may eventually replace the NEM program[1]. On December 23, 2008, the HECO Companies and the Consumer Advocate filed a joint proposal to establish FITS for PV and other renewable energy systems up to 250 kW and 500 kW on the HELCO/MECO and HECO systems, respectively. The outcome of this proceeding may influence the future direction of NEM. Therefore, the HECO Companies and the Parties are proposing to provide an update on the revised proposed NEM Pilot Program after the completion of this proceeding.

b) See response to subpart a.

[1] Energy Agreement, page 28

Response to

Haiku Design and Analysis'

Information Requests

HDA/HECO-IR-1

Regarding potential curtailments of renewable energy generation provided in accordance with the HECO/CA proposed feed-in tariff design:

(a) Would the proposed feed-in tariff design guarantee the purchase of any minimum amount or percentage of energy made available by the generator (over the life of the contract, annually or for any other period of time)?

(b) Would there be any specified limits to the amount or percentage of the energy made available by the generator that would be curtailed without payment (over the life of the contract, annually or for any other period of time)?

(c) Please provide any existing projections or estimates of the amount of curtailment of feed-in tariff generation for any of the HECO Company systems and any technology types?

(d) Is it possible for a prospective generator to determine the amount of curtailment (without payment) that would occur over the term of the feed-in tariff contract and, if so, how?

Response:

a) The FIT would not provide any guarantee of a certain level of energy purchase as the HECO utilities will reserve the right to temporarily curtail output for safety, engineering, and/or operating reasons. The HECO utilities anticipate that the FIT price rate for certain resources may include a slight upward adjustment to account for the possibility of reduced energy sales under tariffs that allow for curtailment (See section 3.5.2 of KEMA report, page 25, attached to the December 23, 2008 filing). The HECO utilities also anticipate that the quantity targets of energy that will be used to set the targets for particular generation technologies allowed under the FIT will consider such performance capabilities as the ability to be curtailed or dispatched by utility system operators (see section 3.6 of KEMA report, page 29, attached to the December 23, 2008 filing).

b) Specific limits for curtailment of a specific generator are not anticipated at this time.

c) Projections of curtailment estimates for any FIT resource are not currently available. Complex simulations of the specific grid at issue would be needed to provide general estimates of any potential for curtailment circumstances. Any such projections would need

to be determined separately for each island grid. On both the MECO and HELCO grids some curtailment of existing as available resources is occurring, primarily during the low load periods at night pursuant to provisions in their PPA's which in most circumstances follow a chronological priority status relative to the date of PUC approval of the project. As new amounts of non firm energy resources are added to the respective systems, the occurrence of curtailment might be expected to extend into other portions of the day. Thus any new resource that is non firm that would be capable of producing energy in this time frame can expect to experience more curtailment than existing resources. At present non firm resources on the HECO grid are not experiencing curtailment. However, that is expected to change in the future as additional non firm resources are introduced to the system. Another factor that could impact future occurrences of curtailment would be the reduction of load served by the utility system. The need by the utility to continue operation of certain firm generating resources that provide grid support could displace the increment of load that the newer FIT resources would try to serve.

d) As noted in the response to subpart c), extensive modeling studies would be needed to provide an estimate of potential curtailment.

HDA/HECO-IR-2

Would the proposed feed-in tariff specify what specific conditions would result in curtailment (without payment) of feed-in tariff generation?

(a) Please identify these conditions.

(b) Would any standards or procedures be specified to determine when the generator would be curtailed without payment?

Response:

Yes.

a. The utility may require a generator to temporarily curtail, interrupt or reduce deliveries of energy: (a) when necessary in order for the utility to construct, install, maintain, repair, replace, remove, investigate or inspect any of its equipment or any part of its system; or (b) if the utility determines that such curtailment, interruption or reduction is necessary because of system operating conditions, a system emergency, forced outage, or compliance with good engineering practices. Please see also the response to HDA/HECO-IR-1, subpart c., and the response to TLP-IR-1.

b. Yes. Curtailment requirements would be specified in the FIT contract to the degree possible, including for providing notice to the generator when feasible of the possibility that interruption or reduction of deliveries may be required, and that the utility shall take reasonable steps to minimize the number and duration of interruptions, curtailments or reductions. The utility would not be obligated to accept or pay for any energy from the generating facility except for such energy that the utility notifies the generator that it is able to take during this period.

HDA/HECO-IR-3

When curtailment of generation is necessary how would it be determined which generator(s) would be curtailed? Would any standards or procedures be established?

Response:

Please see the response to TPL-IR-2.

HDA/HECO-IR-4

Would the frequency and/or duration of curtailments of feed-in tariff generation increase as additional as-available generation is added to the utility system?

(a) If so, how would any anticipated increases in curtailments resulting from later contracts be considered in earlier feed-in tariff contracts?

(b) Would contract terms in earlier contracts be different (regarding curtailment) than terms in later contracts?

Response:

As more as-available generation is added to the utility system, the frequency and/or duration of curtailments of feed-in tariff generation would increase only if the newer as-available generation is non-curtailable. Newer as-available generation that is curtailable would be curtailed ahead of the pre-existing generation, thereby causing no impact to the curtailment of the pre-existing generation.

(a) It would be prudent for the feed-in tariff contract to anticipate the potential for increased curtailment due to addition of large amounts of small, non-curtailable as-available resources to the utility system. Such non-curtailable resources would typically be small scale resources such as residential PV systems, for which installation of curtailment equipment may not be technically or economically feasible. A curtailment hours per year rate could be specified in the contract, which corresponds to a curtailment assumption used in calculating the FIT energy payment rate. Over time, should actual curtailment exceed the assumed curtailment rate, the FIT energy payment rate could be adjusted on a case-by-case basis.

(b) If the process described in subpart a is followed, contract curtailment rates could differ between earlier and later contracts, as the later contracts would likely have a more accurate accounting of the amount of non-curtailable as-available resources on the utility system.

HDA/HECO-IR-5

Please identify any measures (and expected implementation dates) that are being taken by the HECO Companies to increase the amount of as-available renewable generation that can be integrated into each utility system.

Response:

As-available generation (non-dispatchable variable generation) can have many impacts when integrated into a grid and these impacts span different operational and planning timeframes, ranging from impacts to sub-second transient response of the system, second-to-second and minute-to-minute variability of the variable generator's output, sustained drop off of variable generation over the minutes to hours timeframe, and uncertainty in expected output and their impacts to unit commitment and dispatch as well as in planning of future demand-side and generation resources.

Challenges resulting from these potential impacts must be addressed through multiple technical and operational review efforts, including analysis of: 1) revisions to operational practices which assist with the integration of variable generation; 2) revisions to the grid's automatic generation control ("AGC") system which assist with the integration of variable generation; 3) modifications of existing generating units that can increase their ability to respond to fluctuations in variable generation output and to reduce instances of excess energy; and 4) new demand response and generation resources, and the determination of the attributes of these resource, to complement the system to assist in the integration of variable generation.

Examples of measures already taken by the HECO Companies to improve their ability to effectively integrate existing and new variable generators include: 1) modifications to the HELCO AGC system to reduce the responsiveness of the system to short term fluctuations in

power output of as-available generation to avoid overcompensating for these types of fluctuations; 2) modifications and tuning of the control systems for HELCO generating units to increase their responsiveness to respond to fluctuations in as-available generation output; 3) increasing the regulating reserve carried on the HELCO grid to provide greater upward ramping capability of online generators to respond to sustained drop offs of as-available generation; 4) HELCO transmission projects which have increased east-to-west transmission capacity that also allow for greater operating flexibility of dispatchable generation to reduce excess energy and curtailment of as-available generation; 5) a HELCO system stability study to define the minimum amount of steam generation (i.e., generation with higher rotational inertia) that is required to run at all times to ensure the stability of the system during typical emergency events such as transmission system faults, thus allowing better understanding and quantification of the amount of wind and PV energy (i.e., generation with very little to no rotational inertia) that the system can reliably accommodate; 6) greater capability changes to the commitment schedules and dispatch of MECO generation on Maui to reduce instances of excess energy and as-available curtailment; 7) increasing the regulating reserve carried on the Maui grid to provide greater upward ramping capability of online generators to respond to sustained drop offs of as-available generation; and 8) the construction of CIP CT-1 on the Oahu system which will provide greater ramping capability from firm, dispatchable generators which will increase the ability of the grid to respond to fluctuations in power output from as-available generation.

Going forward, all three of the Hawaiian Electric Companies are undertaking system studies to better understand what additional modifications are needed in operating practices and existing generation and T&D equipment, as well as the types and attributes needed from new demand response programs and generating units in order to increase the grid's ability to integrate

as-available generation. For example, the Oahu "big wind" implementation studies that commenced with the signing of the HCEI Energy Agreement are scoped to provide technical and operational solutions to the integration of grandfathered (from Competitive Bidding) as-available renewable IPP proposals, up to 100 MW of renewable IPP projects from HECO's 2008 Request For Proposals, and up to 400 MW of wind energy imported from Molokai and/or Lanai. As part of these implementation studies, similar to what was studied on the HELCO grid, HECO is commencing with a system stability study to define the minimum amount of high rotational inertia generation that is required to run on the system at all times to ensure the stability of the system during typical emergency events such as transmission system faults. Additionally, HECO is currently testing their existing generators and reviewing what changes or modifications can be done to make the units more responsive to variable generation (i.e. higher ramp rates, variable ramp rates). These implementation studies are planned for completion at the end of the first quarter of 2010. MECO has initiated its own separate wind integration study that will analyze similar wind penetration percentages on the Maui grid, to the Oahu "big wind" implementation study. In addition, HELCO is initiating a study to research and develop wind forecasting capabilities that predicts periods of higher risk for large and rapid wind ramping events using available meteorological data available for the Hawaii Island system.

Although the HECO, HELCO, and MECO systems are making efforts to accommodate these variable generation resources while mitigating negative impacts on reliability and cost, ultimately each islands' power system will require generation which provides grid services such as frequency regulation, load following, inertial response, and other critical operating capabilities. Thus in the overall planning of the generation system, renewable energy resources able to provide these types of benefits are a necessary part of the overall goal for reaching the

maximum amount of renewable energy on the power systems. Variable generation resources can comprise a greater part in the energy supply if variable generation is coupled with supplemental capabilities in order to provide characteristics similar to those provided now by conventional generation.

HDA/HECO-IR-6

At the January 20, 2009 informal technical conference regarding the HECO/CA feed-in tariff proposal HDA was referred to Exhibit A of the October Energy Agreement to identify the amount of renewable generation for each HECO utility that would be provided by feed-in tariffs by specific dates. Please identify which and/or what portions of each of the resources in Exhibit A is expected to be provided through implementation of feed-in tariffs. As an alternative response, please provide a similarly detailed schedule of resources expected to be implemented by feed-in tariff by the dates identified in Exhibit A.

Response:

Please see the HECO Companies' response to DBEDT-IR-7, subpart a.

Response to

Hawaii BioEnergy, LLC's
and
Maui Land & Pineapple Company, Inc.'s

Information Requests

HBE/MLP-IR-1

Please provide all documentation that supports the specific thresholds set forth in the HECO Companies'/Consumer Advocate's proposed FiT for each of the technologies proposed. The documentation should include, but is not limited to, supporting studies, analyses, workpapers, reports and publications.

Response:

The rationale for the specific project size thresholds was provided on pages 18-19 of the HECO Feed-In Tariff Program Plan document submitted in the HECO Companies/Consumer Advocate joint proposal as follows:

> A size of 100 kW was considered the starting point for all proposed technologies and islands given the existing provisions of Schedule Q and net energy metering that accommodate projects of this size. The 100 kW size was deemed appropriate for all FIT technologies for the islands of Lanai and Molokai given the very small sizes of the grids.
>
> Consideration was then given to whether there was any basis to increase the proposed size eligibility for any technologies based on other factors, such as the potential for streamlining interconnection reviews. The HECO Companies' Rule 14.H interconnection tariff allows for expedited review of inverter-based systems up to 250 kW, provided that the cumulative amount of generation installed on the distribution circuit does not exceed 10% of the circuit load. Based on this allowance, the FIT size threshold for PV was increased to 250 kW for Maui and the Big Island. For PV on Oahu, a larger 500 kW project size is proposed out of recognition that compared to the Big Island and Maui, there is a lower amount of PV penetration relative to the size of the grid, and there would be less likelihood for cumulative island-wide PV penetration issues. Also, HECO and the Consumer Advocate noted that the focus of the Net Energy Metering Pilot Program ordered by the Commission in Docket No. 2006-0084 is on PV systems up to 500 kW. Finally, a CSP project size of 500 kW is initially proposed based on the CSP project currently under commissioning on the Big Island, recognizing, however, that the particular project did require a detailed interconnection requirements study and "grid-friendly" control and communication provisions.

HBE/MLP-IR-2

The HECO Companies and Consumer Advocate indicate that they applied certain criteria in determining which technologies to include in their proposed FiT.

a. Please provide a detailed description of all criteria used in determining these technologies, together with all documentation which details and supports the use of that specific criteria in determining which technologies to include in their proposed FiT
b. Please explain in detail and provide all documentation which details and supports the HECO Companies'/Consumer Advocate's application of only the criteria they used in determining which technologies to include in their proposed FiT.
c. Please describe in detail how the HECO Companies/Consumer Advocate reached their conclusion to include a specific technology for each technology they included, and conversely, how the HECO Companies/Consumer Advocate reached their conclusion to not include a specific technology for each technology that they did not include in their proposed FiT.

Response:

a. The HECO Companies and Consumer Advocate provided a detailed description of the criteria used in determining the initial set of proposed FIT-eligible technologies in Section 3.4.1.1 of the HECO Feed-In Tariff Program Plan, filed December 23, 2008 to the Commission. Additionally, as stated at the end of Section 3.4.1.1 of the HECO Feed-In Tariff Program Plan:

> The PUC's December 11, 2008 letter directs the parties to the FIT docket to submit cost information for a variety of technologies, therefore it is possible that sufficient information will be provided via this directive that additional technologies may be included in the initial FIT.

Thus, the HECO Companies and Consumer Advocate recognize that additional technologies may be included in the initial FIT, provided that sufficient information is produced in the course of the proceeding by the other parties to justify such inclusion.

b. Please see the response to subpart a.

c. Please see the response to subpart a.

HBE/MLP-IR-3

For each technology (as identified by the HECO Companies/Consumer Advocate for the initial proposed FiT and for consideration in the subsequent phase), please identify, explain and quantify all factors, if any, that prevent the HECO Companies/Consumer Advocate from setting FiT threshold levels at 10 MW or higher. Please provide all documentation, studies, analyses, workpapers, reports and publication that support the HECO Companies'/Consumer Advocate's factors and determination.

Response:

In setting the HECO Companies/Consumer Advocate's proposed FIT generating size thresholds per technology, it is important to mention the HECO Companies/Consumer Advocate's objective to design a FIT that is best suited for renewable energy projects that lend themselves to the use of standardized energy payment rates and power purchase contract terms and conditions, and which can be developed and interconnected to the utility grid in a relatively predictable and systematic manner. Consequently, the proposed FIT initially targets renewable resources that: (1) have a proven track record in Hawaii with known cost data to develop standardized energy payment rates; (2) do not require complex environmental and land use permitting which may impose significant uncertainties in project development timeframes and costs; (3) do not typically, by virtue of their operating characteristics and size relative to the utility system, require extensive and lengthy interconnection studies or the need for significant interconnection requirements; and (4) encourage the orderly introduction of renewable resources based upon cost effectiveness, and maintaining a stable electric grid and system reliability.

The FIT design is proposed to operate in conjunction with a number of well-established utility mechanisms for acquiring renewable energy, such as the Competitive Bidding framework, negotiated power purchase agreements, the PV Host Program described in the HCEI Agreement, and on-site generation agreements without export of power to the utility grid, targeting those

resources that might not be as effectively accommodated by those processes. As discussed in the Commission's December 11, 2008 paper entitled "Feed-In Tariffs: Best Design Focusing Hawaii's Investigation" ("Scoping Paper"):

> *Hawaii already has other mechanisms in place that are designed to encourage the development of renewable resources, including in part: a renewable portfolio standard, the requirement that utilities purchase electricity from qualifying facilities at avoided cost in compliance with PURPA, net metering for smaller renewable installation, high retail rates and competitive bidding programs for renewable resources. (Scoping Paper, page 4)*

Generator sizes of 10MW or higher would comprise a significant amount of generation for the island systems, and so relatively few projects of that size can be accommodated. Such systems would be too large to be connected to the Companies' distribution system and would require extensive and lengthy interconnection studies and likely the need for significant interconnection requirements to maintain the reliability and safety of the utility system. The cost of interconnection for such large generator systems varies considerably per project. Moreover, these types of large projects do not lend themselves to the use of standardized energy payment rates and power purchase contract terms and conditions.

Acquisition of large scale resources in this size range is subject to the rules and requirements contained in the existing Competitive Bidding framework which would likely result in lower costs to the ratepayers, while targeting additions which best meet the ultimate goals of system planning. System planning will optimize the ultimate mix of renewable resources to encourage complementary production characteristics, identify the necessary operational characteristics to ensure reliability, and minimize the required infrastructure. Competitive bidding provides an opportunity for independent power producers and utility companies to develop solutions for the identified specific additional resource needs, in order to provide more cost-effective power generation for all consumers in Hawaii.

Response to

Hawaii Renewable Energy Alliance's

Information Requests

HREA-HECO/CA-IR-1

Would HECO and the CA support an option for customers to choose either a: (i) net metering agreement, or (ii) Feed-In Tariff for wind, solar, biomass and hydro projects up to 500 kW, and if not, why not? Note: HREA's rationale to allow these customer options (or choices) is as follows. We believe net metering agreements would be appropriate and the most likely choice for those customer that want to off-set a portion up to their full load. Similarly we believe Feed-in Tariffs would be appropriate and the most likely choice for those customers that want to be net energy producers.

Response:

The HECO Companies and the Consumer Advocate propose that from a broad ratepayer perspective, a FIT is the appropriate and preferred contracting mechanism for customers who wish to either off-set a "portion up to their full load" or to be a net energy producer. Both options can be offered under a FIT. A FIT customer can opt to sell the full, gross output of the generating resource to the utility, in which case the resource is interconnected on the utility side of the customer's revenue meter. A FIT customer can also opt to sell only the "excess" power to the utility, net of the energy consumed on-site by the customer, in which case a bi-directional multi-channel meter would be used to separately measure when power is being delivered to the customer by the utility and when power is being exported to the grid. On a monthly basis, the utility would pay the customer for the amount of power exported to the grid at the applicable FIT energy payment rate. The customer would be billed for the power it consumes from the utility grid at the applicable retail tariff rate. Under both options, the customer is paid a FIT payment which is targeted to provide the customer a reasonable return.

From the perspective of ratepayers, the FIT is preferable to net energy metering. Under the FIT, rates to customers will be based on the costs of the renewable resources plus a reasonable return to be established by the Commission. Ratepayers should therefore realize the

long-term benefits of renewable resources (as well as the predictability and certainty of long-term, fixed, cost-based pricing). Under net energy metering, the net energy metering customer is subsidized by all other ratepayers. If net energy metering were to apply to systems as large as 500 kW, not only would the total amount of subsidy increase to ratepayers, but the increased subsidy would be provided only to large commercial, governmental, or institutional customers – the only types of customers capable of using such large systems.

HREA-HECO/CA-IR-2

Would HECO and the CA support an option for customers to: (i) choose a Feed-in Tariff for solar projects, or (ii) elect to negotiate, as an exemption to the Competitive Bidding Framework, a power purchase agreement ("PPA") with HECO for solar and other renewable projects 500 kW to 5 MW, and if not, why not? Note: HREA's rationale in this case is simply to allow for customer choice as to the best contractual arrangement for their renewable project, and we also note that the 5 MW limit currently applies to HECO, while project exemptions for MECO and HELCO would be approximately 2.7 MW.

Response:

Projects 5 MW and smaller on Oahu are exempt from the Framework for Competitive Bidding.

As stated in Section 3.2.2 of the HECO Feed-In Tariff Program Plan filed December 23, 2008:

> Sale of as-available energy to the HECO Companies is not required to be done via the FIT and may be contracted on a negotiated power purchase agreement basis, provided that the HECO Companies will not be required to offer pricing, terms, and conditions for such power purchase agreements that are the same as under the FIT, nor follow the same contract processing and technical review procedures established for the FIT. In establishing the FIT pricing and program design, the HECO Companies will encourage development of eligible resources to come in via the FIT in pursuit of the policy objective of encouraging systematic development of renewable resources.

HREA-HECO/CA-IR-3

Would HECO and the CA support a recommendation to the Commission for increase the threshold for exemptions from the Competitive Bidding Framework for projects from 5 MW to 20 MW, and if not, why not? Note: HREA believes this increase in the exemption threshold will dramatically facilitate the increased use of renewables in our islands.

Response:

The HECO Companies object to this information request as it is outside of the scope of issues of the Feed-In Tariff Docket. Notwithstanding this objection, the HECO Companies support the existing thresholds for the Framework for Competitive Bidding.

HREA-HECO/CA-IR-4

Would HECO and the CA: (i) agree that project size and the total number of projects should be limited only by distribution circuit criteria and system operational and safety requirements that would be determined in Interconnection Requirements Studies conducted by HECO and paid for by the project developer, and (ii) collaborate closely with industry and others to identify and remedy distribution feeder and transmission line "bottlenecks," and if not, why not? Note: HREA's rationale is that we simply have to maximize DG applications on distribution feeders and larger wholesale renewable projects on transmission lines in order to meet the HCEI objectives.

Response:

The HECO Companies do not agree that project size and the total number of projects should be limited only by distribution circuit criteria and system operational and safety requirements for the proposed FIT program.

Project size thresholds as proposed in the HECO Companies and Consumer Advocate Joint FIT Proposal targeted project sizes that lend themselves to the use of standardized energy payment rates and power purchase contract terms and conditions, and which can be developed and interconnected to the utility grid in a relatively predictable and systematic manner. Consequently, the proposed FIT initially targets renewable resources and project sizes that: (1) have a proven track record in Hawaii with known cost data to develop standardized energy payment rates; (2) do not require complex environmental and land use permitting which may impose significant uncertainties in project development timeframes and costs; (3) do not typically, by virtue of their operating characteristics and size relative to the utility system, require extensive and lengthy interconnection studies or the need for significant interconnection requirements; and (4) encourage the orderly introduction of renewable resources based upon cost effectiveness, and maintaining a stable electric grid and system reliability.

Regarding limits on the total amount of projects (or the aggregate capacity of generating units) that can be added under a FIT program, other factors that would be considered as described in Section 3.6 of the KEMA Report include: 1) renewable portfolio standards requirements, 2) the goals of the HCEI, 3) technical attributes of the resources, 4) characteristics of the utility systems being interconnected, 5) cumulative amounts of installed variable resources, 6) impacts on curtailment of as-available energy from existing resources, 7) projected energy production levels, 8) ratepayer impacts, 9) impacts on utility credit ratings, 10) administrative resource requirements, and 11) other policy goals including the desire to provide fair opportunity to multiple developers or to encourage development of certain market segments.

The HECO Companies agree that it is important to collaborate closely with industry experts and others to research and implement system upgrades that are practical and cost-effective with the goal of increasing the amount of renewable generation that can be accommodated on the utilities' distribution and transmission systems while maintaining system reliability and safety.

HREA-HECO/CA-IR-5

Would HECO and the CA agree, in light of the current level of market penetration of renewables: (i) that an extensive analysis of project cost data may not be of much value in establishing FiT payment rates, and (ii) it is appropriate and prudent to set rates based on a consensus process to establish rates that are fair and will move the market, and if not, (i) what level of analysis is required and (ii) how long and at what cost would HECO and the CA estimate it would take to conduct said analysis? Note: HREA believes that there is indeed a tradeoff to be made between further study and moving forward with the Feed-In Tariff Program in an expeditious and prudent manner.

Response:

HECO does not agree with HREA's assessment ("not much value"), to the extent that it contradicts the process outlined by the Commission in this proceeding. The Commission issued a scoping paper that described "the Commission's obligation to make decisions based on substantial evidence", and required the parties to provide technology-specific cost data on January 26, 2009[1]. HECO does not know precisely how long it will take to assess the quality of the responses and analyze the cost data provided, or how much this effort will cost. The Technical Conference and Settlement Discussions[2] scheduled for March 2009 should facilitate the discussion of rates, and may be viewed as a consensus-building tool, with the understanding that there are (18) intervenors that may offer a range of differing perspectives.

[1] National Regulatory Research Institute paper titled "Feed-in Tariffs: Best Design, Focusing Hawaii's Investigation" filed on December 11, 12008. Page 9.
[2] Procedural Step #10 on page 4 of the PUC Order dated January 20, 2009.

Response to

Hawaii Solar Energy Association's

Information Requests

HSEA IR#1

HSEA believes that customer-generators should be offered the option of net energy metering for energy produced up to the amount of their annual usage. This approach differentiates customer-generators (who are in the business of offsetting their annual load) from entities in the business of producing power for profit, even at similar scales of operation. Please explain the rationale behind treating customer-generators and entities producing power for sale the same way under a feed-in tariff and how this serves the public interest?

Response:

Please see the HECO Companies' response to HREA-HECO/CA-IR-1.

HSEA IR#2

HECO/CA seem to have indicated a preference for a feed-in tariff rate below the cost of grid power. Yet, the explicit motivation for the feed-in tariff is to *accelerate* the penetration of renewables. Do HECO/CA have evidence that projects using the technologies envisioned for a feed-in tariff are financially viable at per kWh rates below, or even at, the current retail rate? If not, what is being done to ensure that the feed-in tariff is accelerating penetration of renewables?

Response:

The HECO Companies and Consumer Advocate have explicitly stated their intention to set feed-in tariff rates at the cost of generation plus a reasonable profit, consistent with the goals of the Hawaii Clean Energy Initiative Agreement. Such a feed-in tariff rate, by definition, provides for financial viability of projects. Moreover, it is not linked to the retail price of electrity.

HSEA IR#3

Although the HECO companies have expressed a preference for siting storage at utility facilities, this issue seems not to have been definitively addressed. Therefore, please provide any information about differential rates that could become available for various technologies with associated storage, versus the same technology without storage.

Response:

The HECO Companies, in Section 3.5.1 of the HECO Feed-In Tariff Program Plan filed December 23, 2008, propose that FIT rates should differentiate between projects that are more "grid-friendly" than others. As stated:

> The base tariff rate by technology will be paid to generation projects that have grid-friendly features such as being utility dispatchable or curtailable, or have low-voltage/low-frequency ride-through capabilities. The base FIT will be adjusted downwards for renewable energy systems that do not have these features, if allowable from a system integration perspective.

It is likely that future FIT updates will incorporate differential pricing for projects equipped with storage capability. Further information regarding energy storage costs and technical performance characteristics will be necessary to establish such rates.

HSEA IR#4

The HECO Companies have made note of a number of impediments to interconnecting DG sources above various thresholds such as 10% or 15% at the feeder circuit level. (As an example, at the unofficial technical working group meeting, a representative of the Companies referred to concerns about inverter voltage tripping due to fluctuation in grid frequency.) To the extent possible, please provide a comprehensive list of the Companies' perceived impediments to increasing levels of DG penetration under a feed-in tariff.

Response:

The HECO Companies' feeder circuit penetration threshold is designed to provide appropriate notice to the utilities of potentially adverse system impacts from high penetration of distributed generation ("DG") on the system. There are technical issues associated with high penetration of DG that must be studied to determine the system impacts and the potential solutions to address these issues.

The Companies' concerns with DG penetration levels above 10% at the feeder circuit level include: 1) the potential for formation of "unintended islands" where the aggregate DG capacity on a feeder continues to energize an island of load on the feeder (separated from the utility grid), 2) voltage regulation issues that affect system power quality, and 3) the need for more complicated utility protection schemes to maintain system reliability.

The concerns related to an unintended island include safety, system reliability and power quality concerns. The safety concerns are: 1) utility crews unknowingly working on an energized conductor that should be de-energized, and 2) the public touching an energized downed conductor. The reliability and power quality concerns are: 1) damage to customer-owned DG and other equipment that would occur when the DG island is reconnected to the utility system, if the islanded system has remained energized by the DG and drifted out-of-phase with the utility system, and 2) significant risk of damage to customer and utility equipment on

the islanded system due to the nature of the DG, which do not have the capabilities to maintain the necessary range of voltage and frequency. For example, manufacturers of some wind turbines have indicated that distribution feeder voltages can rise to as much as twice the normal voltage on the feeder when the wind turbine becomes islanded from the grid.

Maintaining proper voltage regulation on a feeder is a concern when there is high penetration of DG on the feeder. A distribution feeder transformer is designed to maintain the distribution feeder voltage within tariff limits by physically changing its tap setting as the load on the feeder rises and falls throughout the day, taking into account the voltage rise or drop on the line. A high penetration of variable generation such as PV and wind technologies can cause a problem with the voltage regulation on the circuit since their output can change very quickly, potentially causing rapid changes in voltage that the transformer is not designed to handle. Generally, at DG penetration levels below the stated thresholds, this voltage regulation will function properly.

As the penetration of DG increases, the utilities' protection requirements become more complicated. DG connected to the utility system will increase the available fault current on the feeder. This increased fault current from high penetration of DG can result in miscoordination of the utilities' distribution protection schemes. Also, customer and utility electrical equipment may need to be replaced if the higher fault current level exceeds their fault current rating.

At the island-wide grid system level, there is a need to establish cumulative limits for variable renewable generation for each island to avoid grid stability issues and reduced reliability. Certain HECO Companies have integrated a significant level of variable generation capacity on their grids. All the HECO companies are working to incorporate significantly more variable generation through a variety of mechanisms including the Competitive Bidding process,

and may have correspondingly less ability to incorporate higher amounts of FIT resources. HELCO, for instance, already receives over 30 percent of its energy from renewable resources, with an increasing level from DG resources. The concerns with a large percentage of variable, non-telemetered DG for each island include: 1) reduced system stability and reliability due to displacement of generating units providing frequency regulation and load following services; 2) greater frequency swings due to the variable generating output from wind and PV technologies which result in more underfrequency load-shedding or can lead to system failure; 3) aggregate loss of DG (that are connected according to standard IEEE 1547 voltage/frequency settings) when the system needs the generating capacity, due to voltage and frequency swings resulting from sudden loss of central generating unit(s) which also lead to additional underfrequency load-shedding or system failure; 4) greater curtailment of existing telemetered renewable generation resources that may have lower costs and greater curtailment uncertainty for future telemetered renewable generation, which will likely lead to higher energy prices or financing issues for those larger projects; and 5) reduced potential opportunities for future large-scale renewable generation which may offer greater grid benefits and/or lower costs.

HSEA IR#5

The various intermittent technologies under consideration for feed-in tariffs have different intra-day generation profiles, which relate differently to the utility's load curve. To what extent is this a consideration in developing pricing and penetration levels for various technologies?

Response:

With regard to pricing, HECO and the CA do not propose to time differentiate the rates that generators will receive in the initial FIT. The rationale for this proposal was explained in the response to the Commission's Scoping Paper[1]:

> HECO and the Consumer Advocate acknowledge that there could be value in creating time differentiated feed-in tariffs for projects, particularly dispatchable resources. This would place a premium on peak production, and would encourage generators to maintain their plants in order to dispatch during periods of highest value. The value added from time differentiation needs to be weighed, however, against the increased complexity of setting and administering a time differentiated tariff. HECO and the Consumer Advocate will consider the interaction between FIT and time-of-use rates in the first FIT Update review.

With regard to penetration levels, the HECO and the CA propose a tariff rate structure that would encourage technologies and projects that have grid-friendly features such as being utility dispatchable. For example, generators that are dispatchable and available to provide capacity to the grid when needed may be paid a higher FIT rate than generators that do not have this capability. Pease see the response to HC&S-IR-3.

The HECO and CA also propose island-specific annual FIT quantity targets by technology which will be regularly updated in the course of the FIT updates. As described in Section 3.6 of the KEMA Report:

- **Technical attributes of the resources.** Higher annual FIT quantity targets can be set for FIT systems that support reliable grid management such as low-frequency ride

[1] Response to Commission's Scoping Paper Appendices A and C (Non-Legal Questions), filed January 26, 2009. Page 21 of the Attachment, in response to question twenty-one starting on the bottom of page 20.

through, the ability to provide reactive power and the ability to be curtailed or dispatched by utility system operators. (KEMA Report, page 29)

Response to

Alexander & Baldwin, Inc. through its division Hawaiian Commercial & Sugar Company's

Information Requests

HC&S-IR-1

Pls. explain why HECO/CA is not including biomass as an eligible technology in the proposed first phase of the FiT implementation; especially since biomass is a proven technology, has a long history in Hawaii, helps to regulate the system, and will allow the HECO companies to add more as-available renewable energy on its system?

Response:

The HECO Companies and Consumer Advocate propose that the FIT be complementary to other renewable resource contracting mechanisms such as the existing Framework for Competitive Bidding. As such, the HECO Companies and Consumer Advocate focused their FIT proposal on smaller scale distributed energy resources. Biomass was not included in the initial list of FIT-eligible technologies since insufficient information was available on small scale biomass technology.

HC&S-IR-2

Is HECO/CA planning to propose any size limitations and/or other limitations for biomass (e.g. caps, annual limits, etc.).

a. If yes, please explain in detail the proposed limitations and the justification for the limitations.

b. At what scale of biomass energy project would the Framework for Competitive Bidding be applied if a FiT rate is not permitted?

Response:

a. The HECO Companies and Consumer Advocate are not proposing that biomass resources be included in the initial FIT for the reasons explained in the response to HC&S-IR-1. Thus, no size and/or other limitations for biomass are being proposed. As stated in Section 3.4.1 of the HECO Feed-In Tariff Program Plan filed December 23, 2008 by the HECO Companies and Consumer Advocate, priority consideration will be given to adding biomass and certain other technologies to the FIT during the first FIT Update, proposed to be completed within two years after initial implementation of the FIT. Should biomass be added to the FIT at that time, proposed limitations and the justification for such will be provided.

b. The Framework for Competitive Bidding ("Framework"), adopted December 8, 2006 by Commission Decision and Order No. 23121 in Docket No. 03-0372, provides that competitive bidding be the required mechanism for the utility to acquire a future generation resource. The Framework provides certain size exemptions to this requirement, including for generating units with a net output available to the utility of 1% or less of a utility's total firm capacity, including that of independent power producers, or with a net output of 5 MW or less, whichever is lower. For systems that cover more than one island (i.e., MECO's system, which has generation on Maui, Molokai and Lanai), the system firm capacity will be

determined on a consolidated basis. (Framework, Section II.A.3.f.) At the time of the establishment of the Framework in December 2006, the exemption threshold was 5 MW for HECO, 2.72 MW for HELCO, and 2.72 MW for MECO. Thus, the Framework would be applied to biomass projects above these sizes.

HC&S-IR-3

Will the proposed FiT rate take into consideration and, thus, be higher, if a FiT technology provides firm power that is dispatchable and assists the utility to maintain stable system frequency due to the variability of intermittent generation and displacement of generation performing critical grid services? If yes, please explain how HECO/CA proposed to calculate this increase. If not, please explain why not.

Response:

Consistent with the HCEI Agreement, the proposed FIT pricing philosophy is to set the payment rate to cover the cost of generation plus reasonable profit. FIT tariff pricing would first differentiate between technology type, project size, and location, and would be based on typical project development and operating costs for that technology type. Within a given technology type, further pricing differentiation will be applied considering the technical attributes of the resources. As stated in Section 3.5.1 of the HECO Feed-In Tariff Program Plan filed December 23, 2008 by the HECO Companies and Consumer Advocate:

> The base tariff rate by technology will be paid to generation projects that have grid-friendly features such as being utility dispatchable or curtailable, or have low-voltage/low-frequency ride-through capabilities. The base FIT will be adjusted downwards for renewable energy systems that do not have these features, if allowable from a system integration perspective.

HC&S-IR-4

HECO/CA acknowledges the value of creating a time differential FiTs for projects, particularly dispatchable resources, but says it must be weighed against the increased complexity of setting and administering a time differential FiT and says that it will consider the interaction between the two during the first FiT update. Please explain in detail what factors need to be considered and why it cannot be done sooner.

HECO Response:

The value of time differentiated feed-in tariffs to the utility system is that they would encourage generation that produces power when it is needed most. In other words, time differentiation can help integrate resources into the grid that provide a grid support function by generating on peak. Although HECO and the CA are supportive of this concept, the proposed Program Plan already proposes a fairly complex FIT based on innovations that support grid stability and frequency regulation, and that take each island's unique grid infrastructure into account. As described in *Section 3.5.1, the Program Plan envisions feed-in tariffs not only differentiated by resource, but* also by size, by whether or not the systems are curtailable, and by whether or not the systems have implemented expanded under-frequency ride through. This structure would be further differentiated by island. The Program Plan therefore already embeds a premium on grid integration into the proposed feed-in tariff rates. The result is an innovative approach to feed-in tariff design that builds on the work of other states and countries.[1] The proposed differentiation structure may be sufficient to support the orderly, and technically sound integration of renewable resources into Hawaii's grid. Adding time differentiation for the sake of grid integrity may therefore be an unnecessary addition, which could also add complexity for developers, financiers, and regulators.

[1] Countries such as Spain are beginning to add system integration requirements into their feed-in tariff rates, such as a requirement that wind generators be curtailable.

HC&S-IR-5

HECO/CA is proposing a FiT Agreement that limits the utility's liability under the FiT Agreement to the amount that the utility recovers in its rates. According to HECO/CA, under such a provision, HECO's payments to the customer-generator would be limited to the amounts recoverable in the purchased power (or other direct recovery) clause. Please explain fully HECO/CA's proposal and how it would affect the customer-generator.

a. Is there any danger that the customer-generator would not receive payment or be subject to a reduced payment? If yes, please explain in detail the circumstances for such non- or reduced payment.

b. Does HECO/CA have a draft of its proposed FiT containing this provision? If yes, please provide.

Response:

Preliminarily, a correction to the HECO Companies' and Consumer Advocate's January 26, 2009 joint response to the questions identified in Appendices A and C of the Commission's scoping paper entitled "Feed-In Tariffs: Best Design Focusing Hawaii's Investigation ("Scoping Paper") is required. Specifically, the response to Question number 28 should be modified to acknowledge that in certain recent orders approving "as available" purchase power contracts, the Commission has allowed the utilities to recover the purchased energy charges in the Energy Cost Adjustment Clause for the term of the purchased power agreement[1]. Many of the approvals for HECO's existing contracts do not include this level of assurance.

HECO proposes to include a provision in the FIT agreement pursuant to which HECO's payments to the customer-generator would be limited to the amounts recoverable in the utilities' purchased power (or other direct cost recovery) clause. Contractual assurance that the utility will not be liable for payments which it cannot recover will help mitigate utility risk associated with

[1] See, Decision and Order dated October 31, 2008 in Docket No. 2008-0167 (Lanai Sustainability Research, LLC); Decision and Order 21701 in Docket No. 04-0365 (Kaheawa Wind Power); and Decision and Order 21693 in Docket No. 04-0346 (Apollo Energy Corporation).

purchased power agreements. HECO is not aware how specifically such a provision would impact the customer-generator.

a. While a change in circumstance resulting in the utility not recovering it's purchased power expenses is not foreseen, there is a possibility that such a circumstance could occur. Assurance of cost recovery for the term of the contract would significantly reduce the risks to the customer-generator. .

b. The HECO Companies and Consumer Advocate do not have a draft of a proposed FIT Agreement containing such a provision at this time however anticipate including the following provision in the submission of an FIT Agreement to the Commission: "HECO may reduce payments under this agreement to the level for which HECO receives cost recovery in its energy cost adjustment clause (or any other direct cost recovery clause)."

HC&S-IR-6

HECO/CA are proposing that the FiT rate be based on collected cost data from Hawaii, plus a reasonable profit; thus, is it is HECO/CA's position that the FiT rate may be above the utility's avoided cost? Please explain in detail and provide legal cites for your answer.

Response:

Please see the Joint Response of the HECO Companies and the Consumer Advocate to the threshold legal questions identified in Appendix C to the scoping paper entitled "Feed-In Tariffs: Best Design Focusing Hawaii's Investigation" ("Scoping Paper"), attached to the Commission's letter dated December 11, 2008, specifically the responses to threshold legal questions 1 and 3.

Response to

The Solar Alliance's

Information Requests

SA-IR-1

Pls. confirm that it is HECO/CA's position that a generator-customer may choose to either sell gross outputs or gross net outputs to the HECO Companies. If that is correct, please explain in detail why a eligibility for FiTs and interconnection requirements for a generator-customer who chooses to sell gross net outputs still will be determined by the generator-customer's gross outputs?

Response:

It is the HECO Companies' and Consumer Advocate's position that a customer-generator may choose to either sell gross outputs or gross net outputs to the HECO Companies. Under the proposed FIT program, one of the eligibility requirements for FIT projects is that the projects cannot exceed proposed capacity size thresholds (maximum gross outputs in kW) per technology. These are fixed capacity thresholds which encourage an orderly introduction of renewable resources based upon cost effectiveness with consideration of ratepayer impacts, and maintaining a stable electric grid and system reliability.

In comparison, gross net outputs are variable in nature based on the generator output and customer load. For example, FIT eligibility based on a gross net output of 500 kW, could allow a 5,000 kW generator with an estimated 4,500 kW customer load to be eligible under the FIT program. Depending on the customer load profile, the gross net output could vary from 0 kW to 5,000 kW (if the customer's load were to drop to zero). Such a scenario circumvents the objectives of the proposed FIT program.

Interconnection requirements for generators running in parallel with the utility system are based on various factors including the generator's project size (maximum gross output) and its export capability (gross net output).

SA-IR-2

Pls. confirm whether or not HECO/CA in its proposal is proposing the elimination of the HECO Companies Net Metering Program as part of its FiTs proposal.

a. If yes, explain why it is necessary to eliminate the net metering program. Why can't FiTs and net metering co-exist as programs that support the deployment of renewable energy in Hawaii?

b. If net metering is eliminated, please explain in detail how HECO/CA proposes to makeup the proposed 127 MW of net metered energy by 2030 as stated in Exhibit A of the Energy Agreement?

Response:

Consistent with the Hawaii Clean Energy Initiative Agreement, the HECO Companies and the Consumer Advocate propose that no new net energy metering contract applications be accepted once the feed-in tariff is made available to customers. All existing net energy metering contracts, and net energy metering contracts in the process of utility review at the time the feed-in tariff is implemented, would be grandfathered.

a. Please see the HECO Companies' response to HREA-HECO/CA-IR-1.

b. Please see the HECO Companies' response to DBEDT-IR-7, subpart a.

SA-IR-3

Pls. explain how the interconnection process will be expedited and standardized when DG penetration at the circuit level exceeds 10%?

Response:

The interconnection process will not necessarily be expedited and standardized when DG penetration at the circuit level exceeds 10%. Please see the response to DBEDT-IR-3 (HECO), Subpart d.

SA-IR-4

Pls. explain the rationale as to why the utility should received the REC from the renewable energy generator under FiTs.

a. Isn't the utility just buying the energy under the FiT program?
b. If the utility also wants to purchase the REC, what is the price that HECO/CA is proposing that the HECO Companies pay for it?
c. Will this price be included as an adjustment to the FiT rate?
d. Even if HECO/CA alleges that the REC is not a cost, if it has a value, shouldn't the HECO Companies compensate the renewable energy generator to receive it? If not, why not?
e. Is it HECO/CA's position that these RECs do not have a value?

Response:

a. No. Under the proposed FIT, the utility would be acquiring electrical energy plus associated environmental attributes. The utility's purchase of the renewable energy is driven in large part by the utility's goals and obligations to acquire renewable energy, such as to meet statutory renewable portfolio standards (RPS") requirements.

b. The utility does not intend to separately purchase any REC under the FIT. The utility would purchase the energy and environmental attributes on an "all-in" basis and the FIT energy payment rate would be set at an appropriate level to provide the customer with a targeted internal rate of return.

c. See response to subpart b.

d. Under the proposed FIT pricing methodology, the customer receives a bundled FIT energy payment that provides a targeted internal rate of return. The HECO Companies and Consumer Advocate propose that FIT energy payment rates be based on providing the FIT customer a reasonable profit on their investment. The methodology to establish the FIT payment rate will involve (1) a PUC determination on the targeted internal rate of

return, and (2) establishing the cash flow elements, both positive and negative, for a project over the term of the FIT contract. The energy payment rate will then be adjusted accordingly until the target internal rate of return is reached. For a given internal rate of return, if a REC payment to the developer is included in the cash flow, the energy payment rate would be lower than if there was no separate REC payment line item in the cash flow. In other words, the utility, if separately purchasing the REC from the developer, would correspondingly lower the FIT energy payment rate so that the bottom line internal rate of return to the developer will be the same. Any environmental credit associated with renewable energy purchased by the utility from the developer would be the property of the utility, provided, however, that such environmental credits should be to the benefit of the utility's ratepayers in that the value should be credited "above the line."

e. The environmental attributes of renewable energy do have a value. The FIT energy payment rate will adequately compensate the customer for that value.

SA-IR-5

Please explain in detail the rationale for the HECO Companies to establish the PV Host Program?

a. Is the purpose of the PV Host Program to have the HECO Companies compete with current PV companies for jobs, sites, customers, etc.?
b. Is it HECO/CA's position that the current PV companies are not adequately meeting the demand for PV systems?
c. If a PV system under the HECO Companies PV Host Program is utility owned or utility affiliated owned, wouldn't this create a conflict of interest and/or unfair advantage to the utility and/or utility affiliated? If not, why not?

Response:

Both the FIT and PV Host programs are intended to increase the purchase of energy by the utility from customer-sited renewable energy resources. However, the programs differ in that the FIT will encourage development of projects on more of an individual basis, whereas the PV Host program will seek to acquire lower cost PV energy for all ratepayers by developing multiple systems on a programmatic basis, thereby offering greater economies of scale. The PV Host program is also intended to provide for more direct utility involvement in project design and development, which will help the utility more fully understand and plan for the grid system integration strategies and technologies that are required to allow for increased PV capacity on the grid systems.

a. No. The HECO Companies intend to rely on, not compete with, PV companies to build, own, and operate PV systems under the PV Host program. All PV systems would be competitively procured.

b. No. The HECO Companies' primary purpose for developing the PV Host program is to acquire more PV energy for all ratepayers. This is not reflective of the ability of current PV companies to meet the demand for PV systems in Hawaii. As stated above, the

HECO Companies intend to competitively procure PV Host systems, and will do so from all qualified PV companies.

c. HECO anticipates that appropriate regulatory requirements governing utility or utility affiliate ownership of PV systems and potential conflicts of interest will be established by the Commission in the course of its consideration of the PV Host program. The HECO Companies intend to work primarily with non-utility PV developers providing and owning these systems, selling the generated energy to the utility under power purchase agreements.

SA-IR-6

Please explain in detail how HECO/CA came up with the eligibility requirements for PV systems. What is the justification for the system size caps?

Response:

Please see the HECO Companies' responses to HBE/MLP-IR-1 and HBE/MLP-IR-2.

Response to

Tawhiri Power LLC's

Information Requests

TPL-IR-1

HECO/CA has acknowledged curtailment of renewable generation is presently conducted by HELCO.

a. Please explain in detail what assurances, if any, HECO/CA will provide to Parties that implementation of the FiT program will not continue this trend of curtailment, or increase curtailment of renewable generation, on the HELCO system.

b. If curtailment will not be discontinued, would the HECO Companies compensate the renewable generator(s) being affected at avoided costs calculated in an accurate and transparent manner? If not, why not?

Response:

a. HELCO performs curtailments of renewable energy presently as a necessary measure for operation of the power system. In some cases, curtailments are employed due to the need to reduce power at a certain location on the system to manage power flows on the grid, or to address a particular safety concern or power system problem. However the large majority of curtailments are performed by the system operator in order to balance the power system supply with the power system demand during periods of excess energy production. HELCO is able to accommodate the level of renewable energy that it does by only operating units which must run, and reducing the output of those units which must run to their minimum level including the minimum down regulating reserves, prior to reducing output from the curtailable renewable resources for excess energy. These curtailment practices will continue, whether or not a FIT program goes into effect. Any system changes which reduce the demand served by transmission side generation may increase the need for curtailments for excess energy. If FIT encourages generation which is not visible to the system operator, and is not curtailable, the effect will be to reduce the demand served by transmission-side resources which may increase the need for curtailments of renewable energy. The need for curtailments during minimum load

conditions is a common issue for industry, encountered on systems with a high penetration of renewable energy from wind sources. The impact of FIT on energy sales by transmission-side energy resources is one consideration to factor into the design of the FIT.

b. The HECO Companies do not anticipate establishing a new policy of compensating renewable energy providers for possible lost sales due to curtailments. The costs for energy purchases from independent renewable energy providers are passed through to ratepayers. HELCO administers the energy purchases from independent power producers in accordance with HELCO's contracts with those producers. The HELCO purchase power contracts with the independent power producers are structured to compensate renewable energy providers on the basis of delivered energy. The contracts describe the conditions under which the producer is subject to curtailment. The contracts do not require that the renewable energy providers be compensated for lost potential energy sales due to curtailments that are employed for reasons outlined in the contract.

TPL-IR-2

Should HELCO continue to curtail generation, how will it be determined which generator(s) would be curtailed?

a. Will existing renewable generation on the HELCO system be given priority over FiT generation? If not, why not?

Response:

As described in the response to TPL-IR-1, curtailments are employed by the HELCO system operator as necessary to address system operation issues. The reason for curtailment influences the decision on which generator(s) are curtailed. If there is a transmission line overload, for example, curtailment may be employed in order to reduce the loading on the transmission line. In such a case the curtailment would be done on the generator(s) that are most effective in reducing the overload. If a renewable energy generator is causing a system problem, say for example due to its output being too erratic and causing excessive system frequency error, the generator causing the problem would be curtailed. For conditions of excess energy, all generators are contributing to the over-supply of generation relative to load. For such conditions, for the existing transmission-side purchase power renewable generators, curtailments are made in accordance with a curtailment priority order with respect to the other transmission side generation resources. This curtailment priority is established at the time of the purchase power agreement.

a. This question asks whether existing renewable energy providers on the HELCO system will be given priority over FIT generation. The answer is ultimately dependent upon the structure of the contract obligations to the renewable energy provider and also dependent upon the specific characteristics of the FIT generator. Small distributed generation such as residential PV would not generally have remote telemetry and control mechanisms,

and thus from a system operator's perspective appear only as a load reduction. The system operator would not have the means to curtail the output of such generators. Whether or not the output of FIT generators will result in increased curtailment to the transmission-side resources depends upon the time of production – whether energy is produced during load periods already requiring curtailments for excess energy – and the total amount of production. If production occurs during periods not presently subject to curtailment, there may be additional curtailment if the aggregate amount of FIT generators reduces the system demand by an amount sufficient to create an excess energy condition. This aggregate effect on transmission-side renewable energy producers could be one consideration in the establishment of the system targets for FIT generation. At this time it is not proposed that the FIT be established for larger generators. Generators of a larger size than contemplated under the initial FIT design would be procured under the Framework for Competitive Bidding or through negotiations which would require an interconnection analysis and contractual agreement. For these types of projects, as part of the establishment of the contractual agreements for purchase power, technical requirements would be determined as necessary for visibility and control, and the contractual agreement would define the provisions for curtailment.

TPL-IR-3

Assuming the HECO/CA FiT initiative is intended to enable Hawaii to achieve its renewable energy development goals by providing predictability and certainty with respect to the prices to be paid by the utility for renewable energy:

a. Will HECO/CA support improved due process and access to the P-Month Model in Docket 7310 to afford renewable energy generators the opportunity to verify and forecast avoided costs as part of its due diligence, and for other operational planning purposes?

b. Does HECO/CA agree meeting the due process and transparency requirements in Docket 7310 are necessary for ensuring the avoided cost mechanism will continue to encourage unsubsidized renewable energy development and production in Hawaii as part of a balanced portfolio of renewable resources to meet public policy objectives?

c. If the answer to "b" above is yes, will HECO/HELCO increase its efforts to respond to TPL's repeated requests for information, including access to HECO/HELCO documents specifying and/or describing the modifications to the P-Month Model HECO ordered from the vendor?

d. If the HECO Companies are capable of absorbing additional generating capacity and energy from new renewable resources at subsidized rates, please provide the justification for curtailing production of clean renewable energy at unsubsidized avoided costs?

Response:

a. The HECO Companies object to this question on the grounds that it is not relevant to the issues in this docket and is argumentative. Without waiving these objections, the HECO Companies provide the following response. The avoided energy cost calculations performed pursuant to Docket No. 7310 are performed in accordance with the Updated Stipulation to Resolve Proceeding ("Updated Stipulation") filed by the parties to Docket No. 7310[1] on December 29, 2006, and which Updated Stipulation was approved by the Commission in Decision and Order No. 24806 (filed March 11, 2008) in

[1] The parties to Docket No. 7310 are the HECO Companies, the Consumer Advocate, Mauna Kea Power Company, Inc., the Hawaiian Sugar Planters' Association, now known as the Hawaii Agriculture Research Center ("HARC"); and the Department Of The Navy, on behalf of the Department Of Defense ("DOD"). Citizens Utility Company, Kauai Electric Division, now known as the Kauai Island Utility Cooperative was excused as a party.

Docket No. 7310.[2] The Updated Stipulation addressed many subjects, including methods and procedures for the calculation of avoided energy costs.

The HECO Companies have made detailed information concerning the avoided energy costs available to the parties to Docket No. 7310 and other entities. For example, the HECO Companies have made available the avoided energy cost calculations, including the inputs to the production simulation model. In addition, the HECO Companies have held a number of technical workshops and conference calls with the parties to Docket No. 7310 and other entities in which the HECO Companies have addressed questions raised by the parties and other entities. (For example, technical conferences and/or conference calls with the parties and other entities were held on June 17, 2008, July 23, 2008, September 18, 2008 and December 9, 2008.) The HECO Companies have also made available the vendor's user's manual to the production simulation model upon execution of the vendor's non-disclosure agreement. Further, the HECO Companies have responded to matters raised by the parties and other entities which have sometimes resulted in revisions to the avoided energy cost calculation.

b. Please see the objection and response to subpart "a" above.

c. Please see the objection and response to subpart "a" above.

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[2] These are the short-run avoided energy cost rates for on-peak and off-peak energy currently that are filed on a quarterly basis pursuant to Hawaii Administrative Rules § 6-74-17(b). These short-run avoided energy costs currently vary with the price of oil. With respect to avoided energy cost contracts, the HCEI Agreement (page 16) states:

> The parties regard avoided energy cost based on fossil fuel prices for renewable energy contracts as a vestige of the past. The Hawaiian Electric Utilities will make a request of all existing independent power producers in which PPA are based on fossil fuel prices to renegotiate those contracts to delink their energy payment rates from oil costs and provide ratepayers with stable, long-term and predictably priced contracts. If such requests are not accepted, as opportunities arise, the Hawaiian Electric Utilities will negotiate new contracts or extensions of existing contracts to delink their energy payment rates from oil costs. . . .
>
> All new renewable energy contracts are to be delinked from fossil fuel oil costs.

d. In general, under their power purchase agreements with as-available energy providers, the HECO Companies may curtail the output of the independent power producer ("IPP") if: (1) the performance standards in the contract are exceeded, (2) situations and conditions exist on the utility's system that could affect the reliability of the system, even if the IPP is in compliance with the performance standards, or (3) the total as-available power production exceeds that which can be utilized by the utility's system, such as low-load conditions.

Generally, when the HECO Companies determine that direct curtailment becomes necessary for reasons other than those directly attributable to the IPP's facility, curtailments will be made to the extent possible in reverse chronological order of the chronological seniority dates determined by the utility for the contracts, with deliveries under the contract with the most recent chronological seniority date being the first curtailed, and deliveries under contract with the earliest seniority date being the last curtailed. When the utility determines that direct curtailment becomes necessary for engineering and/or operating reasons that are directly attributable to the IPP's facility, reverse chronological curtailment order may not apply.

In addition, a utility is not required to purchase energy during any period during which, due to operational circumstances, purchases from an as-available energy IPP will result in costs greater than those which the utility would incur if it did not make those purchases but instead generated an equivalent amount of energy itself. Conditions when curtailment may be implemented may include when, during light loading conditions, the utility would have to (i) cycle off-line any base load unit, or (ii) remove one or more components of a combined cycle unit in order to purchase energy from an IPP.

TPL-IR-4

Are the HECO Companies and/or its affiliates proposing to engage in the production and/or sale of energy under FiTs, either individually, or as majority partner(s) or minority partner(s) in a third-party entity? If so, please explain in detail what assurances, if any, HECO/CA will provide the Parties to eliminate any conflict of interest and/or appearance of conflict of interest.

Response:

No. The HECO Companies and/or its affiliates are not proposing to engage in the production and/or sale of energy under FiTs, either individually, or as majority partner(s) or minority partner(s) in a third-party entity.

TPL-IR-5

HECO/CA acknowledges the desire to initiate a FiT as soon as possible must be balanced against the need to establish a FiT that appropriately considers pricing, technical integration, system reliability and safety, rate impacts, and other factors.

a. To guarantee that proper balance, has HECO/CA considered implementing a pilot program to assess the potential impact of the FiT? If not, why not?

b. If a pilot program is not viable, has HECO/CA considered implementing an all-technologies cap for each HECO Company equal to each utility's projected increase in electricity demand over the ensuing 12 months? If not, why not?

Response:

a. The HECO Companies and Consumer Advocate propose a phased approach to implementing the FIT, beginning with a limited set of eligible technologies. Over a two year initial implementation period, the FIT would be updated to accommodate additional technologies and allow improvements to be made to the FIT design as appropriate. This phased approach is similar to a pilot approach in that it is reasonably measured in its initial scale, and allows for updates and improvements based on the initial experience. See Section 3.3 of the HECO Feed-In Tariff Program Plan, filed December 23, 2008.

b. The phased approach described in subpart a is reasonably prudent. The proposed FIT would establish annual FIT contracted capacity targets that appropriately consider pricing, technical integration, system reliability and safety, rate impacts, and other factors.

TPL-IR-6

Please specify the voltage levels at which FiT generation will be allowed to interconnect with each HECO company's system. Please explain the rationale for your answer?

Response:

FIT generation will be targeted for interconnection on the utility distribution systems (voltages of 25kV and lower for HECO, and 12kV and lower for HELCO and MECO). It is the intent of the HECO Companies and Consumer Advocate Joint Proposal to target projects that are more straightforward and predictable to implement, and would generally not require extensive interconnection studies and significant interconnection requirements. Generators connected to the utilities' subtransmission or transmission systems have more costly interconnection requirements due to the criticality and complexities of the subtransmission and transmission systems.

As stated in the HECO Companies and Consumer Advocate Joint FIT Proposal KEMA Report:

> In general, FIT generators will continue to be responsible for the costs of interconnection to the HECO Companies' grids, in conformance with the HECO Companies' Rule 14.H interconnection requirements and processes and the Commission's Decision and Order No. 22248 in the Distributed Generation Investigative Docket No. 03-0371. However, in keeping with the intent of the FIT, reasonable FIT generator interconnection costs, including costs of interconnection studies and modifications to the utility system, will be assumed in the establishment of FIT payment rates for different generator categories. (KEMA Report, page 32)

This is consistent with the statement in the Commission's "Feed-in Tariffs: Best Design Focusing Hawaii's Investigation" (Scoping Paper) that:

> PBFiTs are meant to encourage reasonable projects (i.e., those that are at least as cost-effective as the typical project) rather than any project regardless of its costs. (Scoping Paper, page 6)

Limiting the FIT generation interconnection to the utilities' distribution system will provide some level of predictability for reasonable interconnection requirements and costs.

TPL-IR-7

Please provide examples of the interplay between FiT rates, and Federal and State incentives for renewable energy generation, to verify the former will not undermine the latter?

Response:

The HECO Companies and Consumer Advocate propose that FIT energy payment rates be based on providing the FIT customer a reasonable profit on their investment. The methodology to establish the FIT payment rate will involve (1) a PUC determination on the targeted internal rate of return, and (2) establishing the cash flow elements, both positive and negative, for a project over the term of the FIT contract. Federal and State incentives will be accounted for as positive cash flow elements. The energy payment rate will then be adjusted accordingly until the target internal rate of return is reached. There should be no reason for FIT energy payment rates to "undermine" Federal and State incentives.